

## ABSTRACT

A production process which comprises  
a preform formation step of forming a fiber preform made of  
silicon carbide short fibers having heat resistance of  
5 1000°C or greater; a sol-gel preparation step of preparing  
a sol-gel solution containing a heat resistant compound  
having heat resistance of 1000°C or greater; an  
impregnation-drying-calcination step of impregnating the  
fiber preform with the sol-gel solution, followed by drying  
10 and calcining; and a crystallization step of crystallizing  
the fiber preform after impregnation, drying and  
calcination.